

*On the Metamorphoses of the Crustacea.*

IN Plate VIII. fig. 1, is given a representation of the Zoe or Larva of the common or edible Crab, (*Cancer pagurus*,) alluded to page 9, and which should have accompanied the Memoir it was intended to illustrate, had not the plates been previously filled. Immediately beneath the magnified figure, the animal is given of its natural size : on comparing these figures with those in Plate II, we shall gain a tolerable idea of the disparity in size, between a Zoe newly hatched and one which has attained its full development, and of the changes which the various parts undergo during the growth of the animal ; it must not be taken for granted, nevertheless, that these are the Zoe of the same species of Crab, for although the Zoes of different genera resemble in the main, they yet appear to present variations which may enable an acute observer to pronounce as to the species, when we become more familiar with these curious animals : the most obvious and remarkable difference which the present figure exhibits, is the total absence of the sub-abdominal fins, and the natatory division of the two pair of feet, being provided with only *four* terminal plumose setæ. Zoes of this latter kind or in their younger stages, are very numerous in the harbour of Cove during Spring, while those of full growth are of comparatively rare occurrence, so that it is probable that multitudes of them fall a prey to the other inhabitants of the deep, neither their grotesque figure, nor the extraordinary length of their spines, affording a sufficient protection against many of their enemies.

Subsequent to the discovery announced in the first Memoir, p. 8, viz. that Zoe in undergoing a metamorphosis, appeared to pass into some form of the Decapoda, the author became desirous of ascertaining whether it might not be possible to hatch the ova of some of these animals, so as to afford a satisfactory confirmation of so novel and

unlooked for a fact, and after numerous fruitless attempts year after year, he at length procured, in 1827, examples of the common Crab with spawn apparently ready to hatch, and by means of the kind assistance of Mr. Kingdom, Naval Storekeeper at Hawlboline, succeeded in protecting one individual until the young burst from their envelopes and swam about in myriads, under the exact form given in the plate ; in this stage, they are colourless and transparent as glass, except the dark central part of each eye, and a blackish dot on each side every abdominal segment, the dorsal spine exhibiting a pale pink tint for nearly half its length from the point downwards.

Some gentlemen having expressed doubts as to the *universality* of the metamorphosis in the Decapoda, let it be remembered, that the contrary opinion hitherto held, is merely an assumption, and that the metamorphosis having been proved in a *single* instance, amongst animals so uniform in structure as the Homobranchia, we may safely infer from analogy, as far as regards the particular tribe alluded to, that it is general ; we have seen that in the common Crab, (*Cancer pagurus*) the young is a Zoc, an animal so totally different in its aspect, structure, and habitudes, that it is evident, a very remarkable metamorphosis must take place before it can assume the form so familiarly known of the parent animal ; when this fact is coupled with the circumstance, of no less than *six* other Zoes having been figured, (see Pl. I.) which from their localities and difference in form, most probably belong to as many genera of the Decapoda, it can hardly be said that the universality of the change wants confirmation. Besides, since the former Memoir was penned, the Author has had a confirmation of it in one of the West Indian land-crabs, and in some other of our most widely separated native genera, authorizing what he has advanced at p. 2, viz. " that the greater number of the Crustacea do actually undergo transformations, of which, in addition to

the facts now adduced, further instances will be given in future Memoirs."

In the first Memoir also, when speaking of the satisfactory explanation which this discovery gives of the annual visits of the Land-Crabs to the sea, in order to deposit their spawn in that element, he appears to have been misunderstood, for hitherto the rationale of this long and dangerous journey did not appear. Naturalists have thought it strange and inexplicable, that an animal decidedly and wholly terrestrial, should not spawn in its native haunts, and rear its young at home, instead of putting them to the trouble and risk of a tedious and unknown route back again in their very tender age. There could scarcely be a stronger confirmation than this very circumstance of the universality of metamorphosis, for if there were any exceptions, it would certainly be made in favour of the terrestrial species, but no, they are, when first hatched, incapable of living out of water, with members solely adapted to swimming, hence the parent is impelled by its instinct to seek that element for its progeny, which nature has designed for the whole of the tribe to which they belong. Having been many years amongst the West India Islands, with the facts connected with the land-crabs constantly before me, I could never invent any plausible excuse for this curious piece of economy, nor indeed any one else, which should teach us to regard with complaisance the deviations and eccentricities which we observe in Nature, and which have all, no doubt, some specific object in view, although difficult or impossible for us to discover.

I avail myself of this opportunity to correct an error in the Explanation of the Plates to the Memoir on Zoea, p. 33, where in Plate II. fig. 8, the *two* antennæ from the *same* side are figured, *a.* being the inner, and *b.* the outer antenna.



*I.V.T. del et sculp.*

